

MECHANICAL ENGINEERING DEPARTMENT  
UNITED STATES NAVAL ACADEMY  
ANNAPOLIS, MD 21402

12 March 2004

From: Course Administrator, EM472: Mechanical Engineering Design  
To: Students Enrolled in EM472

Subj: Submission of Final Team Design Notebooks and Closeout Memos

The purpose of the final team design notebook is to present the solution to the problem being addressed by the project. This notebook must provide “complete” documentation of the project – a final report and supporting documentation. This means that someone not intimately involved with the project must be able to read the report and understand what was accomplished. In addition, sufficient detail must be included to allow verification of the work or continuation of the work by an outsider. The final team design notebook should include the following:

- Abstract
- Table of Contents
- Problem Statement
- Objectives
- Technical Approach
- Budget.
- Conclusions and Recommendations
- Appendices

**Abstract:** The abstract is a brief, single paragraph, summary of the contents of the report. It is used to help the reader decide if the report as a whole contains information that is of interest. The abstract should contain statements of the objective(s), methods used, significant results, and conclusions.

**Problem Statement:** This section defines the need that exists and provides background information to support the need. If you were involved in a competition, this is where you need to present the basic outline of the competition, key rules and competition objectives. The detailed competition rules belong in an appendix; however, the reader should be able to understand the nature of the event from the description presented in this section. This section also provides a concise statement of the problem solved.

**Objectives:** This is a concise statement of the things accomplished as part of the project. Meeting these objectives provides a measure of the success of the solution to the problem outlined in the previous section. This section does not need to be lengthy, as long as it relates the solution to the objectives.

**Technical Approach:** This portion of the final report describes the solution to the given problem, and provides brief descriptions and evaluations of the alternatives considered. Design detail is provided that shows the reader how each objective is met. This detail includes

calculations, drawings, and so on. In this section the team verifies that the solution solves the problem. It is paramount that you fully document how well each of the objectives were met. The bulk of the detailed calculations can be located in the appendix. However, the most significant governing equations, results of calculations, figures, and performance results should appear in the main body of the report.

**Budget:** Here the expenditures for the project should be outlined. These expenditures are broken into three categories:

Consulting Dollars  
Design Bucks  
Department Money.

**Conclusions and Recommendations:** This portion of the report summarizes the major points of the solution. This section is also used to make recommendations for future work or for modifications to the present work. Many times after the design is complete the group will see ways that aspects of the project could have been handled that would improve the outcome. These should be brought to the readers attention in the form of recommendations.

**Appendices:** This section shall include (but is not limited to) the team charter, presentations, project management details, and final, clean copies from individual design notebooks of design calculations, purchase requests, shop work requests, detailed test and evaluation results and other supporting materials related to your design project. Each appendix should be separately tabbed and indexed on a List of Appendices.

### **Submission Format**

The team design notebook shall be submitted as a neatly organized binder to include the final report and all supporting presentations and documentation. An electronic copy of the report, presentations and supporting documentation shall also be included on CD or Zip disk. A directory of the CD contents shall be included which lists each filename and a synopsis of the contents of each file. The CD or disk shall be enclosed in a zippered pouch or other secure holder so that it cannot fall out of the notebook. The binder cover and spine should both be labeled to include the project name, team members and class year of the team members. The team notebook stays with the Mechanical Engineering Department so you should make copies for individual team members before submitting your final version.

### **Closeout Memo**

Each team member will submit a closeout memo of two pages max length. Address the following points in this order: (1) summarize what you did; (2) summarize what you learned; (3) summarize what you would do differently knowing what you now know and given the chance to do it over again (not doing the project at all is not an acceptable response); (4) list the resources that were most helpful to you during this period and how they helped you (people, books,

computer programs, etc.); and, (5) tell me what grade you deserve and why. Submit your individual design journal and team Design Notebook(s) with the closeout memos.

**A draft of the final report is due on 12 APR 04. The final design notebook and closeout memos are due 03 MAY 04.**

Richard E. Link  
Professor

# **EM472 MECHANICAL DESIGN**

## **Final Design Notebook Evaluation**

### **INTRODUCTION /10**

(Abstract, TOC, Problem Statement, Objectives)

### **TECHNICAL APPROACH /50**

(Originality/Creativity, Adequacy of Analysis, Evaluation of Alternatives, Iterations on Proposed Solutions)

### **SUPPORTING DOCUMENTATION /20**

### **FORMAT /20**

(Organization, Neatness, Electronic Copies)

# **EM472 MECHANICAL DESIGN**

## **Final Design Review Evaluation**

### **PROBLEM STATEMENT / OBJECTIVES (25)**

Fair

Good

Excellent

### **TECHNICAL APPROACH and PROBLEM SOLUTION (40)**

Fair

Good

Excellent

### **PROJECT COMPLETION (10)**

Fair

Good

Excellent

### **PRESENTATION QUALITY (25)**

Fair

Good

Excellent